IN THE CLAIMS

Please replace the claims as filed with the claims set forth below. This listing of claims will replace all prior versions, and listings, of claims in the application:

1. Cancelled.

2. (Currently Amended) The method of claim ~~1~~27, wherein the determination of the composition of the material further comprises a determination of a mean particle size of particles in a material suspension.

3. (Currently Amended) The method of claim 27~~1~~, wherein the determination of the composition of the material further comprises a determination of a size range of the largest particles in a material suspension.

4. (Currently Amended) The method of claim 27~~1~~, wherein the determination of the composition of the material further comprises a determination of a component ratio of particles in a material suspension.

5. (Currently Amended) The method of claim 2, wherein the ~~shape~~ attribute of the attenuation curve~~feature~~ identified to determine the mean particle size in the material suspension is the maximum slope of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1.

6. (Currently Amended) The method of claim 3, wherein the attribute of the attenuation curve ~~shape feature~~ identified to determine the size range of the largest particles in the material suspension is a width of the derivative of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1.

7. (Currently Amended) The method of claim 4, wherein the attribute of the attenuation curve ~~shape feature~~ identified to determine a component ratio of the particles in the

material suspension is a maximum value of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1.

8. (Currently Amended) The method of claim ~~1~~27, wherein the determination of the composition of the material is made from a predetermined relationship between material composition and the ~~shape feature~~ attribute of the attenuation curve.

9. (Currently Amended) The method of claim 27~~1~~, wherein the determination of the composition of the material from the ~~shape feature~~attribute of the attenuation curve further comprises comparing a known ~~shape feature~~attribute of the attenuation curve for a known material to the attribute of the attenuation curve ~~shape feature~~ from the measured attenuation curve.

10-17. Cancelled.

18. (Currently Amended) An apparatus for determining the composition of a material, the apparatus comprising:

(i) means for measuring ~~a wave attribute~~the attenuation of multiple ultrasonic waves transmitted through a material at multiple frequencies~~, the wave attribute being selected from a group consisting of an attenuation and a phase of the multiple ultrasonic waves~~;

(ii) means for deriving ~~a~~ an attenuation curve from the measured attenuations ~~of the measured wave attribute~~ as a function of change in the ultrasonic wave frequency;

(iii) means for identifying an ~~shape feature~~ attribute of the attenuation curve from the attenuation curve related to the composition of the material; and

(iv) means for determining the composition of the material from the attribute of the attenuation curve ~~shape feature~~.

19. (Original) The apparatus of claim 18, wherein the determination of the composition of the material further comprises a determination of a mean particle size of particles in a material suspension.

20. (Original) The apparatus of claim 18, wherein the determination of the composition of the material further comprises a determination of a size range of the largest particles in a material suspension.

21. (Original) The apparatus of claim 18, wherein the determination of the composition of the material further comprises a determination of a component ratio of particles in a material suspension.

22. (Original) The apparatus of claim 18, wherein the determination of the composition of the material further comprises a determination of a component ratio among multiple suspending constituents in a material suspension.

23. (Currently Amended) The apparatus of claim 18, wherein the means for measuring ~~a wave attribute~~ the attenuation of multiple ultrasonic waves comprises a first ultrasonic transducer transmitting an ultrasonic wave and a second ultrasonic transducer receiving the ultrasonic wave wherein the first ultrasonic transducer and the second ultrasonic transducer transmit and receive the ultrasonic wave at a select angle of offset relative to a line between transducer centers.

24. (Currently Amended) The apparatus of claim 18, wherein the means for measuring the attenuation of multiple ultrasonic waves ~~a wave attribute~~ comprises an ultrasonic transducer shielded from the material by a protective wall.

25-26. Cancelled.

27. (Currently Amended) A method of determining the composition of a material, said method comprising:

(i) measuring an attenuation ~~wave attribute~~ of multiple ultrasonic waves transmitted through a material at multiple frequencies~~, the wave attribute being selected from a group consisting of an attenuation and a phase of the multiple ultrasonic waves~~;

(ii) deriving an attenuation curve from the measured attenuations ~~of the measured wave attribute~~ as a function of change in the ultrasonic wave frequency;

(iii) identifying an ~~shape feature~~ attribute of the attenuation curve from the attenuation curve related to the composition of the material; and

(iv) determining the composition of the material from the ~~shape feature~~ attribute of the attenuation curve.

28. (New) The method of claim 27 wherein the attribute of the attenuation curve is identified near a frequency where the wavenumber is approximately equal to 1.

29. (New) The method of claim 27 wherein the attribute of the attenuation curve is selected from a group consisting of:

the maximum slope of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1;

a width of the derivative of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1; and

a maximum value of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1.

30. (New) The method of claim 27 wherein the identification of the attribute of the attenuation curve is made while the material is enclosed in a container.

31. (New) The apparatus of claim 18 wherein the attribute of the attenuation curve is identified near a frequency where the wavenumber is approximately equal to 1.

32. (New) The apparatus of claim 18 wherein the attribute of the attenuation curve is selected from a group consisting of:

the maximum slope of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1;

a width of the derivative of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1; and

a maximum value of the attenuation curve near a frequency where the wavenumber *ka* is approximately equal to 1.